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EXAMINER
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LEROUX, ETIENNE PIERRE

ART UNIT	PAPER NUMBER
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2161

DATE MAILED: 10/13/2004

7

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/927,589

Applicant(s)

YIANILOS ET AL.

Examiner

Etienne P LeRoux

Art Unit

2171

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22, 24, 25 and 27 is/are rejected.
- 7) ☒ Claim(s) 23 and 26 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 August 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 4.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_.

***Claim Status***

Claims 1-27 are pending. Claims 1-22, 24, 25, and 27 are rejected. Claims 23 and 26 are objected to and would be allowable if rewritten to overcome the rejection(s) under 35

U.S.C. 112, 1<sup>st</sup> and 2<sup>nd</sup> paragraphs.

***Claim Objection:***

Claims 23 and 26 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 1<sup>st</sup> and 2<sup>nd</sup> paragraphs, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Claim 23 is allowable for including the bxtree layer stores for each internal node a triplet of the from (address, num\_records, hash) where address is the address of a child node, num\_records is the number of records in a child's subtree, and hash is the XOR of the digest of the records in the child's sub-tree.

Claim 26 is allowable for including the osynch layer invokes Get\_Interval\_Hashes function to compute a single summary of records lying in a given key interval and creating a local summary and a remote summary, the size of the remote database restricted to the given key interval is checked for the number of records lying in the key interval whereby: if the number of records is larger than a predetermined number, the remote database partitions the key interval into smaller sub-intervals and transfers summaries for each sub-interval to the local database wherein each sub-interval is then synchronized.

### *Drawings*

Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Figure 4 is objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "37" has been used to designate sb touched, pp touched and block touched bit vectors. Furthermore, the specification description of Figure 4, does not include the reference numbers 30, 35, 37, 40 and 45. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### *Specification*

The disclosure is objected to because the memory layout of bedrock mapping mechanism is incomplete. In particular, the disclosure discusses Figure 4 on page 7, line 26 through page 9, line 24. This discussion appears to relevant to Figure 3. Correction is required. See MPEP § 608.01(b).

Furthermore, with reference to Figure 3, i.e., the layout of bedrock file in non-volatile memory, the functioning of "magic number," device 12 in Figure 3 is difficult to ascertain. The functioning of the "magic number" is not clearly explained in the specification.

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-27 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

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Claims 1 and 27 recite “implementing a B+ tree on top of the bedrock that features data records of a form and an additional operation to compute a digest of records within a range of key values.” One of ordinary skill in the art would not know how to make and use the invention because the bedrock layer and the B+ tree layer are not clearly distinguished in the specification.

In particular, page 15, lines 24-27 of the specification states:

The database allows different records to have key and value fields of different sizes. This affects the structure of the tree in several ways. It stores each node of the tree in a separate bedrock.

For purposes of this Office Action, it is assumed that the bedrock layer and the B+ tree layer are indistinguishable. Examiner assumes that data associated with the B+ tree is stored in the bedrock layer.

Claim 8 recites “the bedrock layer mapping consists of a superblock level, a pages level and a map segments level which are kept in main memory and assembled via a slalom procedure when an existing bedrock is open.” The specification does not describe in clear and concise terms the manner and process of mapping the bedrock layer per the above claim language such that a skilled artisan can make and use the invention.

Claim 11 recites “the bedrock layer supports nested transactions.” The specification does not describe in clear and concise terms the manner and process of supporting nested transactions per the above claim language such that a skilled artisan can make and use the invention.

Claim 13 recites “the bedrock layer supports in-block checksums.” The specification does not describe in clear and concise terms the manner and process of supporting in-block checksums per the above claim language such that a skilled artisan can make and use the invention.

Claim 14 recites “the bedrock layer supports inter-block checksums for error correction.” The specification does not describe in clear and concise terms the manner and process of error correction per the above claim language such that a skilled artisan can make and use the invention.

Claim 15 recites “the superblock layer supports superblock redundancy.” The specification does not describe in clear and concise terms the manner and process of supporting superblock redundancy per the above claim language such that a skilled artisan can make and use the invention.

Claim 16 recites “the bedrock layer supports a bedrock block device controlling a new partition.” The specification does not describe in clear and concise terms the manner and process of controlling a new partition per the above claim language such that a skilled artisan can make and use the invention.

Claim 17 recites “the bedrock layer supports memory caching.” The specification does not describe in clear and concise terms the manner and process of supporting memory caching per the above claim language such that a skilled artisan can make and use the invention.

Claim 18 recites “the bedrock layer supports transparent in-memory block packing and unpacking.” The specification does not describe in clear and concise terms the manner and process of memory-block packing and unpacking per the above claim language such that a skilled artisan can make and use the invention.

Claim 21 recites “the digest of records of the bxtree layer is compacted by a cryptographically strong function.” The specification does not describe in clear and concise

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terms the manner and process of compacting the bxtree layer per the above claim language such that a skilled artisan can make and use the invention.

Claims 2-7, 9, 10, 12, 19, 20 and 22-27 are rejected for being dependent from a rejected base claim.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 27 recite “the bedrock that features data records of a form (key, value).”

The claim language is indefinite as the scope of the limitation cannot be determined. It is unclear whether applicant is claiming “form” or “key and value.” Examiner will assume “form” for this first action on the merits and “form” will be given its broadest reasonable interpretation..

Claim 23 recites “the bxtree layer stores for each internal node a triplet of the form (address, num\_records, hash).” The claim language is indefinite as the scope of the limitation cannot be determined. It is unclear whether applicant is claiming “form” or “address and num and records and hash).” Examiner will assume “form” for this first action on the merits and form will be given its broadest reasonable interpretation.

Claims 2-22 and 24-26 are rejected for being dependent from a rejected base claim.



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***Art Rejection precluded***

Claims 1-27 are rejected under 35 U.S.C. 112, first paragraph and 35 U.S.C. second paragraph. No art rejection of claims 8, 21, 23 and 26 is provided in this office action.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-7, 9, 10, 12, 17, 20, 22, 25 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Pat No 5,991,1771 issued to Falls et al (hereafter Falls) in view of US Pat No 5,089,953 issued to Bozman, (hereafter Bozman), as best examiner is able to ascertain.

Claims 1 and 27:

Falls discloses:

- a bedrock layer [Falls discloses non-volatile magnetic/optical storage/disk array storage devices in col 3, lines 49-50 but does not disclose bedrock layer. However, this feature is deemed to be inherent to the Falls system because as col 3, lines 15-25 shows, network computers with the above storage means are the ultimate and most basic storage device such that data can be copied from a network computer to a mobile computers] for implementing a block-oriented [Falls discloses objects are eliminated from storage on a precise basis which reads on block-oriented in col 28, lines 1-9] storage abstraction with transactional support [col 3, lines 26-35,] that allows for updates to be enacted atomically [col 35, lines 33-41] and to persist
- osynch layer for implementing a communication protocol for pairwise range synchronization of bxtree databases to simultaneously reduce local computation, bits communicated as well as communication rounds [Falls discloses synchronizing in col 5, lines 33-45 and col 37, lines 10-1, Falls discloses reduced implementation cost, col 14, lines 20-25, Falls discloses minimizing network transfers in col 15, lines 25-30].

Falls discloses the elements of claim 1 as noted above. Furthermore, Falls discloses a general B-tree layer. However, Falls fails to disclose a bxtree layer for implementing a B+ tree on top of the bedrock that features data records of a form and an additional operation to compute a digest of records within a range of key values. Bozman discloses a bxtree layer for implementing a B+-tree on top of the bedrock that features data records of a form and an additional operation to compute a digest of records within a range of key values [Fig 6 and col

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10, line 59 through col 11, line 13]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Falls to include a bxtree layer for implementing a B+ tree on top of the bedrock that features data records of a form and an additional operation to compute a digest of records within a range of key values as taught by Bozman for the purpose of providing a simple tree structure in which all data is stored in the external nodes (i.e. leaf nodes) and the internal nodes contain separator keys which provide a route to the leaf nodes. The ordinarily skilled artisan would have been motivated to incorporate a B+ tree to improve Fall's invention by providing an efficient method for searching for data [Bozman, col 4, lines 40-60].

Claim 2:

Falls discloses the bedrock layer uses a disk block array and a block mapping system to direct new data writes intended to overwrite a given logical block address to a free physical block leaving original data intact, and simultaneously the logical block address is tentatively mapped to the physical block containing the new data written [col 16, lines 44-55].

Claim 3:

Falls discloses the bedrock layer provides a commit operation that atomically switches all tentative maps to permanent maps for providing transactional capability at low level [col 15, lines 4-25].

Claim 4:

Falls discloses the bedrock layer operates within a single, preallocated file and does not use an outside logging facility [col 36, lines 35-45].

Claim 5:

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Falls discloses the bedrock layer operates in a raw disk environment [col 7, lines 1-15].

Claim 6:

Falls discloses the bedrock layer writes to a shadow physical block until a commit or abort command updates a map array [col 16, lines 44-55].

Claim 7:

Falls discloses the bedrock layer consists of logical block addresses which are separated from physical blocks using a map array that stores correspondences between the blocks [col 26, lines 43-46].

Claim 9:

Falls discloses the bedrock layer consists of a slalom procedure abstracted and parameterized for read operations, write operations, and abort operations [col 24, lines 59-67, col 4, line 52 through col 5, line 6].

Claim 10:

Falls discloses the bedrock layer supports parallel transactions. [col 15, lines 4-25]

Claim 12:

Falls discloses the bedrock layer supports bedrock based file systems [col 17, lines 28-37].

Claim 17:

Falls discloses the bedrock layer supports memory caching [col 18, line 66 through col 19 line 12].

Claim 20:

Falls discloses variable length records [col 26, lines 50-52] and data is written to it in a portable fashion [col 3, lines 35-45].

Claim 22:

The combination of Falls and Bozman disclose the elements of claim 1 as noted above.

Falls fails to disclose internal nodes of the bxtree layer form an index over leaves of the tree where the data resides; leaf nodes of the bxtree store a fixed size digest for each record which is used to verify the records integrity and used by functions providing support for range synchronization, and; the internal nodes store a set of keys to guide a search for records.

Bozman discloses internal nodes of the bxtree layer form an index over leaves of the tree where the data resides; leaf nodes of the bxtree store a fixed size digest for each record which is used to verify the records integrity and used by functions providing support for range synchronization, and; the internal nodes store a set of keys to guide a search for records [Fig 1].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Falls include internal nodes of the bxtree layer form an index over leaves of the tree where the data resides; leaf nodes of the bxtree store a fixed size digest for each record which is used to verify the records integrity and used by functions providing support for range synchronization, and; the internal nodes store a set of keys to guide a search for records as taught by Bozman.

The ordinarily skilled artisan would have been motivated to modify Falls per the above for the purpose of using the B+ tree to ensure the storage of the tree is always in a correct state such that that repair is not necessary after a system failure [abstract, col 3, lines 1-5].

Claim 25:

Falls discloses the records of the bxtree layer are of the form (key, version, value) where the version field can be used by handler functions that are invoked by the osynch layer [col 25, line 13]

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Falls and Bozman and further in view of US Pat No 6,574,750 issued to Felber et al (hereafter Felber), as best examiner is able to ascertain.

Claim 11:

The combination of Falls and Bozman disclose the elements of claim 1 as noted above.

The combination of Falls and Bozman fail to disclose the bedrock layer supports nested transactions.

Felber discloses the bedrock layer supports nested transactions [col 5, lines 20-30]

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination of Falls and Bozman to include the bedrock layer supports nested transactions as taught by Felber.

The ordinarily skilled artisan would have been motivated to modify the combination of Falls and Bozman per the above for the purpose of speeding up a transaction because if the transaction does not commit for some reason, in a nested transaction the transaction does not

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automatically roll back and the application can try to correct the problem and retry the transaction [Felber, col 5, lines 20-30].

Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Falls and Bozman and further in view of US Pat No 6,185,514 issued to Skinner et al (hereafter Skinner), as best examiner is able to ascertain.

Claim 13:

The combination of Falls and Bozman discloses the elements of claim 1 as noted above.

The combination of Falls and Bozman fails to disclose wherein the bedrock layer supports in-block checksums.

Skinner discloses wherein the bedrock layer supports in-block checksums.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination of Falls and Bozman to include wherein the bedrock layer supports in-block checksums as taught by Skinner.

The ordinarily skilled artisan would have been motivated to modify the combination of Falls and Bozman per the above for the purpose of checking whether tampering with the files has occurred [col 19, lines 1-5].

Claim 14:

The combination of Falls and Bozman discloses the elements of claim 1 as noted above.

The combination of Falls and Bozman fails to disclose wherein the bedrock layer supports inter-block checksums for error correction.

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Skinner discloses wherein the bedrock layer supports inter-block checksums for error correction.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination of Falls and Bozman to include wherein the bedrock layer supports inter-block checksums for error correction as taught by Skinner.

The ordinarily skilled artisan would have been motivated to modify the combination of Falls and Bozman per the above for the purpose of checking whether tampering with the files has occurred [col 19, lines 1-5].

Claims 15 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Falls and Bozman in view of US Pat No 5,463,772 issued to Thompson et al (hereafter Thompson), as best examiner is able to ascertain.

Claim 15:

The combination of Falls and Bozman discloses the elements of claim 1 as noted above.

The combination of Falls and Bozman fails to disclose the bedrock layer supports superblock redundancy.

Thompson discloses the bedrock layer supports superblock redundancy [col 13, lines 32-45].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination of Falls and Bozman to include the bedrock layer supports superblock redundancy as taught by Thompson.



The ordinarily skilled artisan would have been motivated to modify the combination of Falls and Bozman per the above for the purpose of security for the data stored on a magnetic disk or CD ROM by providing multiple copies in case some local defect ruins one or more of the copies [col 13, lines 32-45].

Claim 18:

The combination of Falls and Bozman discloses the elements of claim 1 as noted above.

The combination of Falls and Bozman fails to disclose the bedrock layer supports transparent in-memory block packing and unpacking.

Thompson discloses the bedrock layer supports transparent in-memory block packing and unpacking [col 16, lines 1-18].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination of Falls and Bozman to include the bedrock layer supports transparent in-memory block packing and unpacking as taught by Thompson.

The ordinarily skilled artisan would have been motivated to modify the combination of Falls and Bozman per the above for the purpose of making the peripheral appear to the host as if it contains its own file system [col 16, lines 1-18].

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Falls and Bozman in view of US Pat No 5,860,079 issued to Smith et al (hereafter Smith), as best examiner is able to ascertain.

Claim 16:

The combination of Falls and Bozman discloses the elements of claim 1 as noted above.

The combination of Falls and Bozman fails to disclose wherein the bedrock layer supports a bedrock block device controlling a new partition.

Smith discloses wherein the bedrock layer supports a bedrock block device controlling a new partition [col 6, lines 34-52].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination of Falls and Bozman to include wherein the bedrock layer supports a bedrock block device controlling a new partition as taught by Falls.

The ordinarily skilled artisan would have been motivated to modify the combination of Falls and Bozman per the above for the purpose of dividing the hard disk into memory segments for audio and photoCD [col 6, lines 34-52].

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Falls and Bozman and further in view of US Pat No 6,560,599 issued to Boa et al (hereafter Boa), as best examiner is able to ascertain.

Claim 19:

The combination of Falls and Bozman discloses the elements of claim 1.

The combination of Falls and Bozman further discloses insertion, deletion and retrieval of records [col 28, lines 1-9].

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The combination of Falls and Bozman fails to disclose Get All Hashes and Get Interval Hashes.

Boa discloses Get All Hashes and Get Interval Hashes [col 6, lines 55-62].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination of Falls and Bozman to include Get All Hashes and Get Interval Hashes as taught by Boa.

The ordinarily skilled artisan would have been motivated to modify Falls and Bozman per the above for the purpose of analyzing the distribution of physical records and for making adjustments to the hash function as desired for optimization [col 6, lines 55-62].

Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Falls and Bozman and further in view of US Pat No 6,453,404 issued to Bereznyi et al (hereafter Bereznyi), as best examiner is able to ascertain.

Claim 24:

The combination of Falls and Bozman discloses the elements of claim 1 as noted above.

The combination of Falls and Bozman fails to disclose each node of the bxtree layer is stored in a separate bedrock block, and, each bedrock block has the same number of bytes of storage.

Bereznyi discloses each node of the bxtree layer is stored in a separate bedrock block, and; each bedrock block has the same number of bytes of storage [claim 1].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination of Falls and Bozman to include each node of the bxtree layer is stored in a separate bedrock block, and; each bedrock block has the same number of bytes of storage as taught by Bereznyi.

The ordinarily skilled artisan would have been motivated to modify the combination of Falls and Bozman per the above for the purpose of choosing a simple format for the allocation of memory.

Furthermore, Falls discloses variable length records and variable length keys [col 26, lines 50-52].

It follows logically that given a fixed storage size and variable length records leaf nodes and internal nodes can have different numbers of records.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Etienne LeRoux whose telephone number is (703) 272-4022. The examiner can normally be reached on Monday – Friday from 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Safet Metjahic, can be reached on (703) 272-4023.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 272-2100.

Patent related correspondence can be forwarded via the following FAX number (703) 872-9306

Etienne LeRoux

10/7/2004



SAFET METJAHIC  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2100